

**PACKAGE TO DIE OPTICAL COUPLER HAVING HIGH COUPLING
EFFICIENCY AND ALIGNMENT TOLERANCE**

ABSTRACT OF THE DISCLOSURE

[0054] In an embodiment of the invention, an optical coupler couples light unidirectionally from integrated circuit package to an integrated circuit die. The package has a large waveguide with a waveguide core that has a low index of refraction. The die has a set of very small waveguide cores that have a high index of refraction relative to the index of refraction of the large waveguide core on the package. The waveguide cores with high index of refraction attract light from the waveguide core with the low index of refraction. No light is coupled back into the large waveguide core. Also, the optical mode of the large waveguide on the package is smaller than a subset of waveguide cores on the die. Thus, light is coupled from the package to the die without the waveguide cores having to be tightly aligned with each other.